Nov. 29, 1966 G. R. DEGEN 3,288,406

ADJUSTABLE PIPE SUPPORT

Filed Nov. 22, 1965 2 Sheets-Sheet 1

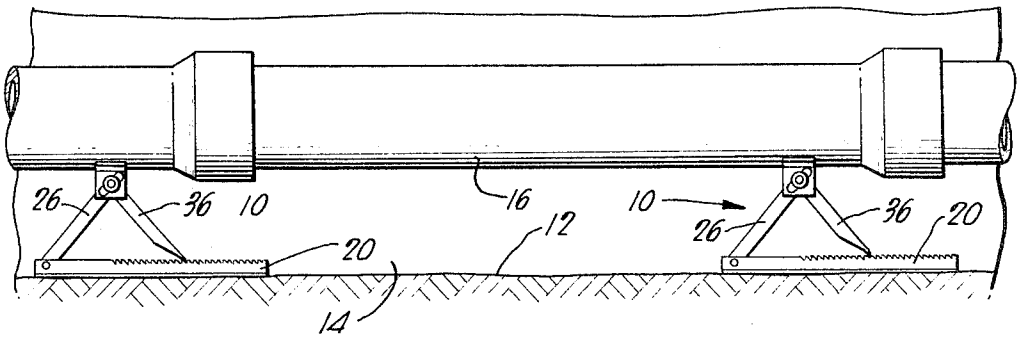


FIG. 1

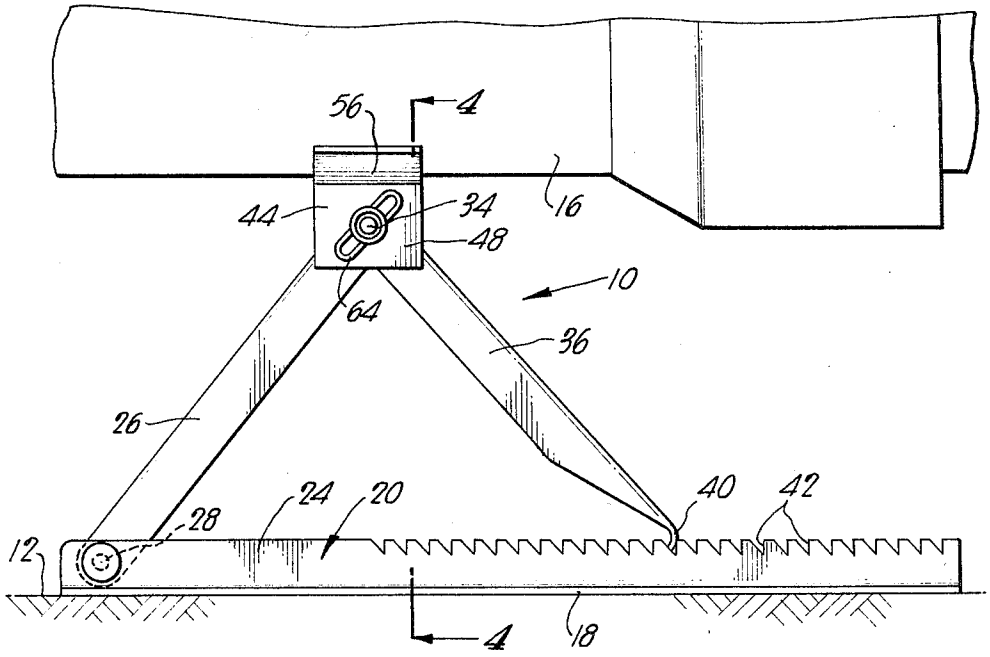


FIG. 2

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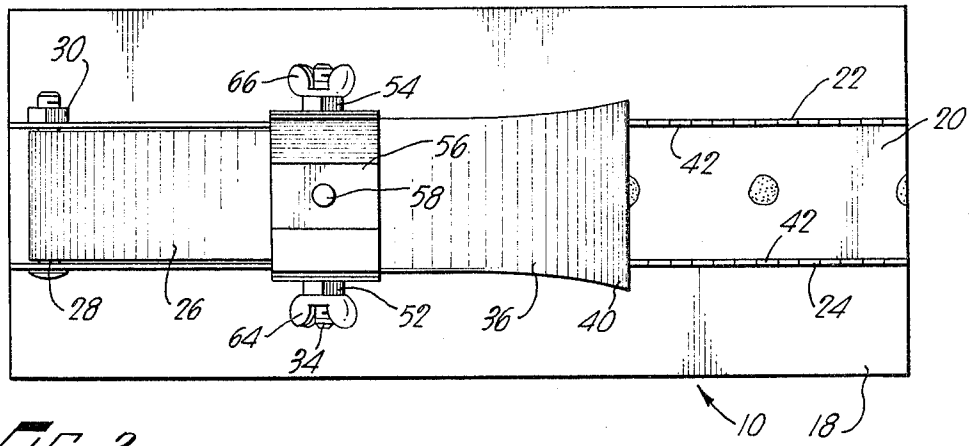


FIG. 3

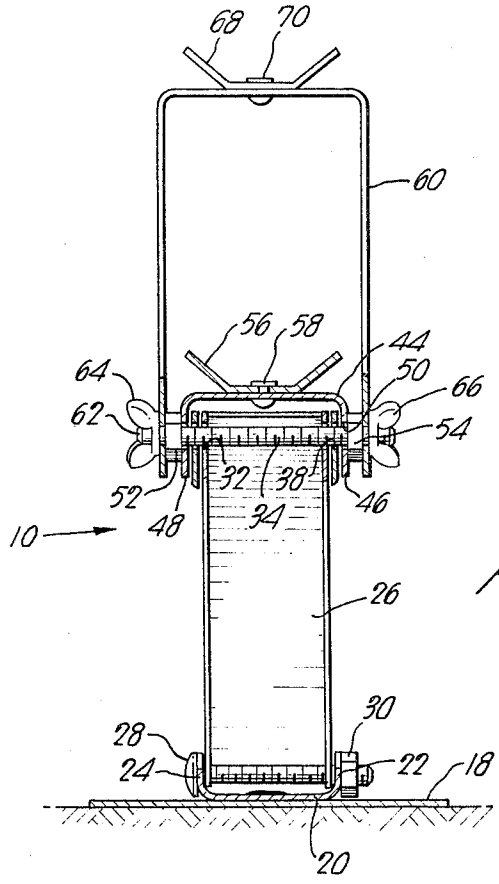


FIG. 4

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ADJUSTABLE PIPE SUPPORT

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6 Claims. (Cl. 248—49)

This invention is directed to an adjustable pipe support, and particularly a pipe support which is adaptable to firmly support pipes of different natures above different types of bases or foundations. The pipe support is adjustable so that variations in the level of the base with respect to parallelism to the desired pipe line are compensated for by adjustment.

Many different kinds of pipe lines must be positioned so that they are level or at a specific incline to the horizontal. Any drain line which relies upon the effects of gravity upon the fluid within the pipe must be properly laid so as to accomplish proper drainage. To properly employ the gravitational forces upon the liquid to be drained, a slight downward incline in the direction of desired flow is required in the pipe line. Presently such drain lines, when they are to be positioned underground, are simply laid in the bottom of the trench dug for them. However, variations in incline occur in the trench bottom. Thus, to have a properly aligned pipe line, blocks, stone and bricks are picked up at random and placed under the pipe line in an attempt to obtain the proper incline. However, such materials used for raising the pipe line above the trench bottom are usually not of the proper height and considerable adjustment must be made to accomplish proper inclination. Furthermore, in the case of drain lines laid within buildings or other structures, the foundation or floor which is used for their support is usually level. Again, supporting blocks are required to provide proper incline to the line and these supporting blocks again are usually not of the proper height. Furthermore, the usually random assortment of supporting blocks is unsightly.

Accordingly, it is an object of this invention to provide an adjustable pipe support structure which is useful in providing firm, rigid pipe support above the base upon which the pipe is to be supported, and to provide adjustability within the pipe support so that the pipe support properly and firmly engages the pipe to hold it at any one of a plurality of adjustable height positions.

It is a further object of this invention to provide an adjustable pipe support which is useful on any foundation and is sufficiently strong and long lived to be useful in support of a pipe which is to be filled around with soil.

It is a further object of this invention to provide an adjustable pipe support which has a large plurality of individually selectable pipe support positions and which firmly cradles the pipe.

It is a further object of this invention to provide an adjustable pipe support which is lockable in position when supporting a pipe at any one of a predetermined number of selectable heights, and in which the load of the pipe upon the pipe support locks the adjustability of the pipe support.

It is another object to provide a pipe support which is easily and quickly employed so as to save labor time.

Further objects and advantages of this invention will become apparent from a study of the following portion of this specification, the claims and the attached drawings in which:

FIG. 1 is a side elevational view showing the adjustable pipe support of this invention used in conjunction with a pipe laid adjacent the bottom of a trench;

FIG. 2 is an enlarged side elevational view thereof;

FIG. 3 is a top plan view thereof; and

FIG. 4 is a section taken generally along the line 4—4 of FIG. 2 and further including additional structure.

As an aid to understanding this invention, it can be stated in essentially summary form that it is directed to an adjustable pipe support. The pipe support of this invention has a base. Supported on the base is at least one set of a plurality of abutments. Pivoted to the base is a first link, and pivoted to the free end of the first link is a second link. The end of the second link away from the pivot is engageable against any one of the abutments. Pipe support and locking structure is provided at the pivoted juncture between the two links. The placement of the free end of the second link in different abutments places the pipe support bracket at different distances from the base. As additional structure, an additional pipe support extension bracket can be installed thereon so as to raise the top limit of support height available by the adjustable pipe support.

This invention will be understood in greater detail by reference to the following portion of this specification wherein the drawings are described. Referring now to the drawings, the adjustable pipe support of this invention is generally indicated at **10**. In FIG. 1, the pipe support **10** is indicated as being in a trench having a bottom **12** and side walls, one of which is indicated at **14**. The bottom **12** serves as a foundation to support pipe **16**, which is spaced therefrom by means of the adjustable pipe supports **10**. The bottom **12** serves as a foundation, and it may be the top of the ground, or a finished structure such as a concrete floor. It serves as a foundation upon which the pipe **16** is supported.

The pipe support **10** has a base **18** which is adapted to engage upon the foundation to support the pipe support **10** and pipe **16**. Base **18** has a substantially flat bottom, and sufficient extent so as to provide proper support. As is shown particularly in FIG. 4, channel **20** is secured to base **18** with its web against base **18**. Channel **20** has upstanding flanges **22** and **24** which serves as support for the upper structure. The channel **20** may be integrally formed with the base **18**, or may be secured thereto by any convenient means, such as spot welding.

Link **26** serves as a first link, and is formed in the form of a channel. The lower end of link **26** has its flanges cut away, and has its web bent into circular configuration so that a pivot may pass therethrough. Pivot **28** is in the form of a bolt having nut **30** and a pivot **28** passes through suitable holes and flanges **22** and **24** as well as pivotally through the circularly bent web structure at the lower end of link **26**. If preferred, the flanges of link **26** can be extended downward and not be cut away so as to provide a pivot point by holes in the flanges.

Pivot hole **32** is provided through the flanges of link **26** adjacent its upper end. Pivot **34** passes therethrough. Pivot **34** is in the form of a bolt. Link **36** is also in the form of a channel having a web and upstanding flange. Pivot hole **38** is formed in these flanges and carries pivot **34**. Thus, links **26** and **36** are pivoted together and link **26** is pivoted to channel **20**. Link **36** is substantially the same length as link **26**, and terminates at its lower end in pawl **40**. Ratchet teeth **42** are formed in the upper edges of flanges **22** and **24** and are of such size and shape as to be engageable by pawl **40**. This structure defines as isosceles triangle with a channel **20** at the base, pivot **34** at the apex and links **26** and **36** at the sides. As is well known, such a structure is very rigid. Furthermore, the adjustment of the height of pivot **34** above base **18** is readily adjusted by positioning pawl **40** in selected ones of ratchet teeth **42**. Thus, for a lower position, the pawl **40** is moved to one of the ratchet teeth to the right in FIG. 2. For a higher adjustment

of pivot **34**, the pawl **40** is moved to one of the ratchet teeth toward the left in FIG. 2. It is also seen that downward force at pivot **34** forces pawl **40** into its selected ratchet tooth **42**. This urges tighter engagement and a firm structure results. It is well known that a triangular structure is very rigid, and force in the downward direction makes the juncture between pawl **40** and ratchet teeth **42** very rigid. Thus, the pivot point **34** is firmly positioned, after an adjustment has been made.

U-shaped bracket **44** has downwardly extending legs **46** and **48** which have holes **50** therein. Holes **50** are engaged around pivot **34**. Preferably the pivot **34** is a bolt with nuts **52** and **54** engaged thereover for the retention of the structure in place. Thus, bracket **44** is pivotable around pivot **34** so that its top may be positioned parallel to base **18**. Bracket **44** has yoke **56** secured thereon by means of pivot pin **58**. Yoke **56** is pivotable on its pivot pin and is designed to support a pipe. As is indicated in FIGS. 1 and 2 yoke **56** is generally U-shaped and partially embraces a pipe placed thereon. Since yoke **56** is pivotable, the length of base **18** need not be aligned with the axis of the pipe supported, but yoke **56** can be turned so as to embrace in any orientation. Furthermore, the pivoting of bracket **44** permits the yoke **56** to properly embrace a pipe which has some inclination to it.

In use, the adjustable pipe support **10** is placed in such a position as to adequately support pipe **16**. When pipe **16** is being assembled, one or more of such pipe supports **10** can be used therewith to obtain the proper pipe orientation. As the pipe becomes substantially engaged by interpipe engagement, only one such pipe support **10** is necessary for each pipe length, providing the pipe **16** has sufficient rigidity to support itself throughout its own length. The pawl **40** is placed in the appropriate ratchet tooth **42** so as to provide proper height and support for the pipe. Such adjustment is quick and accurate, so that proper pipe alignment is easily and quickly obtained. In cases where the pipe is in a trench, as is shown in FIG. 1, the pipe supports **10** are left in the trench at the time of backfill. It is well known that fresh backfilled earth does not properly support a pipe. However, the retention on these pipe supports **10** in the trench maintains the alignment until the earth can properly settle and support the pipe. This settling is accomplished long before the supports **10** fail due to their being in such a subterranean location.

An additional adjustment feature is provided to properly support pipes which are so far above the bottom **12** that they are unreachable by the normal adjustment of pipe support **10**. This additional height is accomplished by attachment of an extension **60**, see FIG. 4. Extension **60** is in the form of a U-shaped bracket with downwardly extending legs. The downwardly extending legs have holes **62** which are engageable over pivot **34**. Manually operable wing nuts **64** and **66** are engaged upon the threads which are at least on the outer end of pivot **34**. The upper end of extension **60** carries yoke **68** which is pivotally mounted on pivot **70**.

In those cases when the yoke **56** cannot reach the pipe **16**, because it is too high above bottom **12**, extension **66** is installed by removal of wing nuts **64** and **66**, placement of the extension **66** with its holes **62** engaging on pivot **34** and reinstallation and tightening of wing nuts **64** and **66**. The pipe support **10** is then placed under the pipe **16** and adjusted with the yoke **68** against the pipe so that it supports the pipe at proper heights. Thus, the pipe support **10**, of economic construction so that it may be left in a ditch, provides firm support over a wide range of adjustability.

This invention having been described in its preferred embodiment, it is clear that it is susceptible to numerous modifications and changes within the scope of the invention and without the exercise of the inventive faculty. Accordingly, the scope of this invention is defined by the scope of the following claims.

I claim:

1. A support, said support being adapted to support structure at any one of a plurality of selectable positions, said support comprising:

base, said base being adapted for ground engagement, first and second ends on said base, a pivot support on said base adjacent said first end thereof, a plurality of abutments on said base, said plurality of abutments extending from adjacent said second end of said base toward said first end of said base;

a first link, said first link having a pivot end and an upper end, said pivot end being pivoted to said base at said pivot support adjacent said first end of said base;

a second link, said second link having an upper end and a pawl end, a pivot pin, said pivot pin being pivotally attached to said upper end of said first link and said upper end of said second link so that said first and second links are pivoted together, said pawl being selectively engageable against any one of said abutments so that said pivot pin can be selectively positioned away from said base in a plurality of selectable positions in accordance with the engagement of said pawl against any one of said plurality of abutments;

support structure supported on said first and second links adjacent their upper ends, said support structure being adapted to support a structure at any one of a plurality of different selected distances away from said base.

2. The support structure of claim **1** wherein said support structure adjacent the upper end of each of said first and second links comprise a bracket, said bracket being engaged upon and supported by said pivot pin.

3. The support structure of claim **2** wherein said bracket has a yoke secured thereto, said yoke having upwardly directed arms so as to engage a structure to be supported

4. The support structure of claim **3** wherein said yoke is pivoted to said bracket so that said upwardly directed arms of said yoke may be oriented in different directions with respect to said bracket, said bracket being pivoted on said pivot pin so that the orientation of said bracket with respect to said base may be adjusted.

5. The support structure of claim **4** further including an extension, said extension being pivoted on said pivot pin, said extension extending above said bracket, a further yoke pivotally attached to said extension away from its securement on said pivot pin so that the distance of said further yoke away from said base can be selected by selectively engaging said pawl against one of said abutments.

6. The support structure of claim **5** wherein said extension is secured to said pivot pin by means of wing nuts.

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